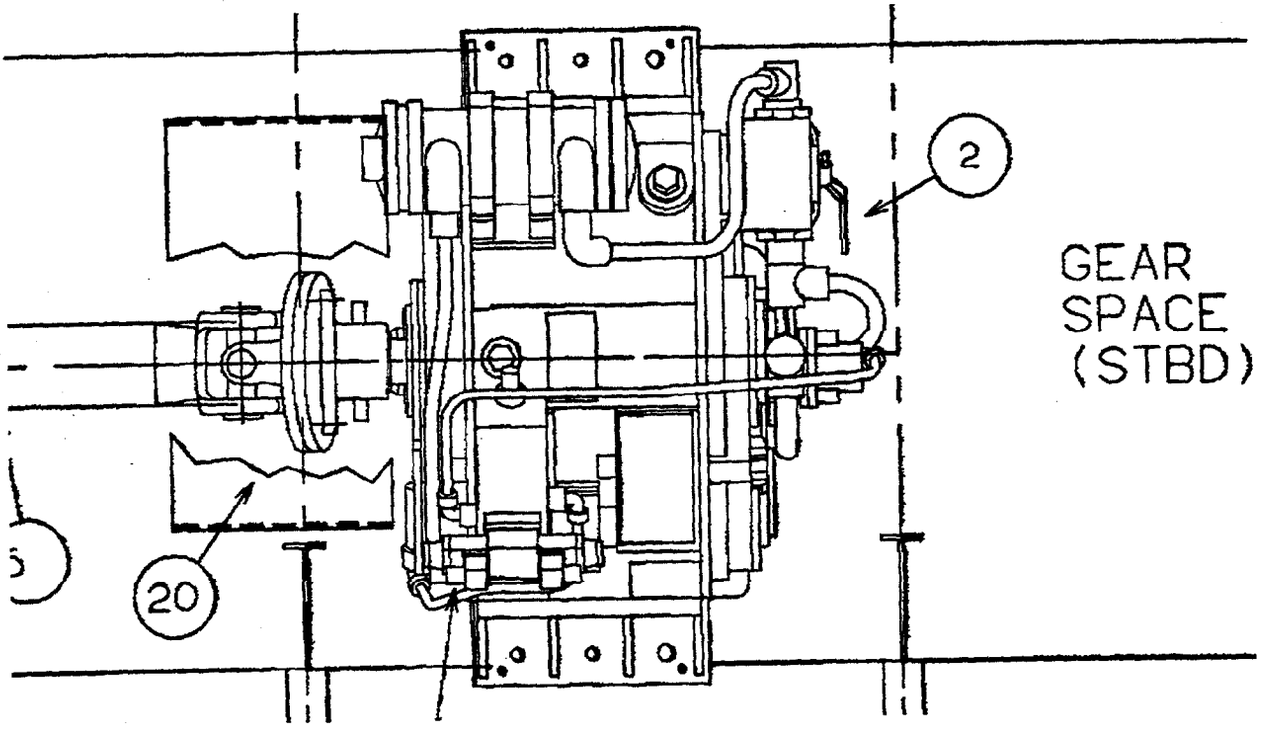
U.S. Department
of Transportation

**United States
Coast Guard**

# NAVAL ENGINEERING COMPUTER AIDED DESIGN STANDARDS




**COMMANDANT INSTRUCTION M9085.1A**

U.S. Department of Transportation
United States Coast Guard

Commandant
United States Coast Guard

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COMDTINST M9085.1A
FEB 10 2000

COMMANDANT INSTRUCTION M9085.1A

Subj: NAVAL ENGINEERING COMPUTER AIDED DESIGN STANDARDS

1. PURPOSE. This Manual provides direction for Coast Guard activities and commercial contractors using a computer aided design (CAD) system to develop drawings for hull, mechanical, electrical, ordnance and electronic systems and equipment for Coast Guard ships and standard boats.

2. BACKGROUND.

   a. Commandant (G-S) has adopted AutoCAD™ Release 14 as the standardized computer aided design system for Coast Guard ships and standard boats.

   b. AutoCAD™ systems have been installed at all major Coast Guard maintenance and logistics support activities.

3. DIRECTIVES AFFECTED. Naval Engineering Computer Aided Drafting System, COMDTINST M9085.1 is cancelled.

4. POLICY.

   a. To allow for the life-cycle maintenance of all Coast Guard ship and standard boat drawings, all drawings shall be delivered to the Coast Guard in AutoCAD™ Release 14 or earlier versions of AutoCAD ™ software in ".dwg" file format.

   b. Commanding Officer, Engineering Logistics Center (ELC), Baltimore, MD is designated as the systems manager for all AutoCAD™ drawings issues relating to Coast Guard ship and standard boat drawings. All questions relating to the preparation of CAD drawings for Coast Guard ships and standard boats shall be directed to Chief, Technical Information Branch (ELC-02T).

DISTRIBUTION – SDL No. 136

| | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B | 15* | | * | | 1 | * | | | * | | | | 5 | | 5 | | | | | | | | | | 5 | |
| C | | | | 1 | | | | | | | 1 | | | | | | | 1 | | | | | | 2 | | |
| D | | | | 1 | | | | 1 | | | | | | | | | | | | 1 | | | | | 1 | |
| E | | | | | | | 1 | 1 | | | | | | | | | | | | | | | | | | |
| F | | | | | | | | | | | | | | | | | | | | | | | | | | |
| G | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | |

NON-STANDARD DISTRIBUTION: *B:a COMDT (G-SEN) 5 ea, (G-A) 5 ea, (G-SEC) 5 ea; *B:c MLCP (t) 5 ea, MLCP (vad) 5 ea, MLCA (vad) 5 ea, MLCA (t) 5 ea; *B:f Yard Industrial (code id 300) 20 ea; *B:i ELC Baltimore (02T) 20 ea

c. The CAD standard requirements identified in this Manual apply to all new drawings and for all revisions to existing drawings generated using the CAD drawing system.

d. For Coast Guard units and commands, this Manual does not constitute authority to purchase the hardware or software required to comply with this instruction. Such procurements must be conducted in accordance with current Coast Guard directives for the purchase of computer hardware and software.

5. CONTENTS. This Manual consists of written standards for use in the development of CAD drawings.

6. CHANGES. Recommendations for future changes to this manual shall be submitted to:

Commanding Officer (ELC-02T)
Engineering Logistics Center
2400 Hawkins Point Rd.
Mail Stop 25
Baltimore, MD 21225-5000
Phone: (410) 762-6909

7. ACTION.

a. All new drawings and revisions to existing drawings shall be delivered to the Coast Guard in AutoCAD™ Release 14 or earlier versions of AutoCAD ™ software in ".dwg" file format.

b. All Coast Guard commands preparing drawings for Coast Guard ships and standard boats shall comply with the contents of this Manual.

c. Coast Guard commands using commercial contractors or other federal agencies to prepare new or revise existing drawings shall provide a copy of this Manual to the contractor. All drawings provided by commercial contractors or other federal agencies shall be prepare in accordance with the requirements of this Manual.

d. All major acquisition projects for Coast Guard ships and standard boats shall comply with the requirements of this Manual. Projects with production contracts in place prior to the effective date of this Manual are exempt.

R. F. SILVA
Assistant Commandant For Systems

| RECORD OF CHANGES | | | |
|---|---|---|---|
| CHANGE NUMBER | DATE OF CHANGE | DATE ENTERED | ENTERED BY |
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## CHAPTER - 1 INTRODUCTION

A. The Need For Standards.

1. To achieve the full benefits of the Computer Aided Design (CAD) System being implemented throughout the Coast Guard Engineering community, the use of standards and procedures by everyone involved in the development of drawings must be enforced. The intent of these standards and procedures is to ensure not only that the CAD system is being used consistently and efficiently but also that the drawings created today can be used productively tomorrow. This Manual sets forth the minimum standards that shall be followed in the development of all CAD drawings created for ships and standard boats.

2. These standards are subject to change and will require updating periodically to take advantage of technology advancements. Recommended changes shall be forwarded to Commanding Officer (ELC-02T), Engineering Logistics Center, Baltimore, MD 21226 in writing.

B. Additional Standards And Requirements.

1. These standards are not stand-alone requirements, they are intended to augment existing commercial and military standards that are commonly used in drawing development within Naval Engineering. Except as noted in this Manual, the following standards shall be considered an integral part of this standard.

2. Where a conflict exists, the standards and procedures outlined in this Manual shall take precedence over the references listed below.

**LIST OF STANDARDS**

| | |
|---|---|
| COMDTINST M9000.6 (Series) | USCG Naval Engineering Manual, Chapter 085 |
| DOD STD-l00 | Engineering Drawing Practices |
| DOD-D-l000 | Drawings, Engineering and Associated Lists |
| MIL-STD-25 | Ship Structural Symbols for Use on Ship Drawings (See Note) |
| ANSI/ASME Y32.l0 | Graphic Symbols for Pipe Fittings, Valves and Piping |
| ANSI/ASME Y14.2M | Line Conventions and Lettering |
| ANSI/ASME Y14.l | Drawing Sheet Size and Format |

| | |
|---|---|
| MIL STD-12 | Abbreviations for Use On Drawings, Specifications & Technical Documents |
| ANSI/ASME Z32.2.3 | Graphic Symbols for Fluid Power Diagrams |
| ANSI/ASME Y32.2.6 | Graphic Symbols for Heat-Power Apparatus |
| MIL-STD-15/2 | Electrical Wiring Equipment Symbols for Ships P1ans |
| MIL-STD-100G | Engineering Drawings |
| ANSI/ASME Y32.2.4 | Graphic Symbols for Heating, Ventilating and Air Conditioning |
| MIL-T-31000 | Technical Data Packages, General Specifications For |
| ANSI/ASME Y14.3M | Multi-view and Sectional View Drawings |
| ANSI/ASME Y14.5M | Dimensions and Tolerances |
| ANSI/ASME Y14.34M | Parts Lists, Data Lists and Index Lists |

Note: Ship drawings shall comply to Ship Structural Symbols for Use on Ship Drawings except that steel symbol designations may conform to the current AISC "Manual of Steel Construction."

## CHAPTER - 2 DRAWING SIGNATURE AUTHORITY

A. Drawing Signature Authority.

1. Newly created drawings and revisions to existing drawings require the signature of a designated Coast Guard authority to become part of the official Coast Guard drawing set. Authorized signature authorities for new and revised drawings are:

| DRAWING TYPE | ORIGINAL ISSUE AUTHORITY | REVISION ISSUE AUTHORITY |
|---|---|---|
| Contract & Contract Guidance Drawings | Chief, Office Of Naval Engineering (G-SEN) | Chief, Office Of Naval Engineering (G-SEN) |
| All Others | Engineering Logistics Center, MLCs (v/t), Commanding Officer CG Yard, TISCOM, C2CEN or Project Resident Office. (See Note) | Engineering Logistics Center, MLCs (v/t), Commanding Officer CG Yard, TISCOM, C2CEN or Project Resident Office. (See Note) |

Note: For the Engineering Logistics Center (ELC), signature authority is the Branch Chief of the cognizant Equipment Management Branch. For operational and support units, signature authority is the cognizant MLC (v/t), Commanding Officer CG Yard, TISCOM, C2CEN or Project Resident Office.

2. For new drawings, signature approval on sheet one of a multi-sheet drawing constitutes approval of all sheets of that drawing. Approval signatures are not required on subsequent sheets of the same drawing.

3. When a drawing revision is approved, the approval authority shall initial and date the revision block. The approval initials in the revision block on sheet one constitutes approval of all portions of that revision. In addition, the name and activity of the approving official shall be printed below the initials.

4. For AutoCAD™ produced new drawings, printed names (i.e. text) with the suffix designator "/s/" shall be substituted for drawing approval signatures. For AutoCAD™ produced revised drawings, printed initials (i.e. text) with the suffix designator "/s/" shall be substituted for drawing revision signatures.

## CHAPTER - 3 DRAWING NUMBERS

A. Drawing Numbers And Drawing Numbering Convention.

1. All drawings relating to cutters, boats, and installations thereon shall be assigned a Coast Guard drawing number issued by ELC-02T in accordance with the Naval Engineering Manual, COMDTINST M9000.6 (series).

2. The Coast Guard drawing number is the key component for drawing identification and management. Drawing numbers shall be shown in all title blocks and will be structured as follows:

| PLAN-SET NUMBER CONSISTING OF: | | | | |
|---|---|---|---|---|
| **Platform Length** | **Platform Sub-Class** | **Vessel Class** | **Ship Work Breakdown Structure (SWBS)** | **Serial Number** |
| 110 | B | WPB | 521 | 001 |
| **DRAWING NUMBER: 110B-WPB-521-001** | | | | |

Note 1: The plan-set number (Platform Length, Platform Sub-Class and Vessel Class) for new platform classes or platforms undergoing major renovation shall be assigned by ELC-02T.

Note 2: Older plan-sets may use a different numbering system than that described above (i.e. 9000 series number versus SWBS number). In those instances where a different numbering system is used, new and revised drawings shall follow the existing plan-set numbering system.

## CHAPTER - 4 ELECTRONIC FILE LABELING CONVENTIONS AND STORAGE/TRANSMISSION MEDIA

A. AutoCAD™ Electronic File Naming Convention For Drawing Files.

1. There are six entities needed to uniquely define an electronic drawing file to allow easy recognition of file content. The entities for each field are:

*<plan-set>_<swbs>_<serial>_<sheet>_<insert sheet>_<revision>.dwg*

**Examples**

| DRAWING NUMBER | ELECTRONIC FILE NAME |
|---|---|
| 378-FRAM-E-0243-002, Sheet 5A, Rev. D | 378-FRAM-E_243_2_5_A_D.dwg |
| 76-TE-9811-001, Sheet 5, Rev. - (Old 9000 Series Numbering System) | 76-TE_9811_1_5_-_-.dwg |

Note 1: All fields are mandatory.
Note 2: If the sheet is not an insert sheet (i.e. sheet 5 "A"), use dash in the insert sheet field.
Note 3: Use dashes in the revision field to indicate an original, non-revised sheet.
Note 4: Do not use leading zeros in any field (i.e. SWBS 0243 = 243).
Note 5: .dwg indicates file extension (type).
Note 6: All fields will be separated by an underscore.

B. Allowable Storage And Transmission Media For Electronic Files.

1. The Naval Engineering – Technical Information Management System (NE-TIMS) will be used for long-term storage and management of all Naval Engineering drawings. Commands authorized signature authority in accordance with Chapter 2, paragraph A. shall use NE-TIMS to check out/in drawings in accordance with established procedures.

2. For commands and commercial entities not authorized direct access to the drawings management features of NE-TIMS, CD-ROM is the preferred medium of temporary storage and transmission of electronic files to the ELC.

3. If the number/size of electronic files to be transmitted to the ELC does not justify cutting a CD-ROM, files may be placed on a 3-1/2 floppy disk for temporary storage and transmission. If a floppy disk(s) is used, a separate disk shall be used to store and transmit individual drawings (multiple sheets of the same drawing can be placed on the same disk). Each floppy disk shall be labeled with the following information:

B. 3. a. Drawing title (i.e. Main Engine Mounts).

b. Drawing number including plan-set, SWBS, serial number (i.e. 378-FRAM-E-243-001).

c. Number of sheets and sheet revision numbers (i.e. Sheets 1, Rev. C, Sheets 5, Rev. B).

4. Compression or "zipping" utilities for file compression shall not be used.

5. File encryption shall not be used. If encryption is required for security reasons, an approved method of encryption will be designated by ELC-02T.

## CHAPTER - 5 GENERAL REQUIREMENTS

A. Authorized Software. All new drawings and revisions to existing drawings shall be delivered to ELC-02T in AutoCAD™ Release 14 or earlier versions of AutoCAD ™ software in ".dwg" file format.

B. Drawings Prepared In Data Processing Systems (word or text and graphics processing).

1. If data processing systems other than AutoCAD™ are used to prepare drawings, the word or text and graphics must be imported and imbedded into the AutoCAD™ file (links to external files are not allowed). The word or text and graphics file must be readable/modifiable within AutoCAD™ or the Microsoft ™ Office Suite without the use of additional software.

2. Drawings may be prepared in discipline specific software or other applications. These can be either programs that operate within AutoCAD™ or programs that operate independently, but any files generated by these programs shall be in AutoCAD™ Release 14 ".dwg" format and shall be capable of being viewed, printed and modified without the use of the original generating program.

C. Drawing Titles. All sheets of a drawing will use the same drawing title as used on sheet one. If it is desirable to use sub-titles on subsequent sheets, the sub-title shall be displayed below the drawing title using smaller fonts.

D. Paper Space.

1. The border and standard blocks required by this Manual shall be inserted in paper space at 1:1 scale. The actual, physical components depicted shall be at full scale (1:1) in model space and viewports to model space shall be provided (the model can be scaled in the viewport to meet viewport requirements). Text, drawing elements such as cutting plane depictions, breaks and similar drafting entities shall be in paper space. Viewports shall be on either layer "0-viewports" or on layer "Defpoints".

2. Existing model space drawings undergoing revision need not be converted to paper space unless specifically stated in the contract or statement of work.

E. Drawing Layering Convention.

1. Layer naming systems shall be used and based on the specific usage of the drawing information and shall be used to distinguish system types, component sizes and/or materials, manufacturing data, geometric location or orientation, type of drawing entity, or other uses specific to the needs of the user. The following general guidance shall be applied to all drawings:

a. No entities may be drawn on layer zero except elements of blocks. Blocks with internal layering may be inserted on layer zero.

E. 1. b. At a minimum, layering systems shall provide at least one separate layer name for each of the following elements:

(1) Dimensions.

(2) Notes and other text not part of dimensions.

(3) Reference or construction lines that do not represent actual material or structure, such as baselines, centerlines, lines of frames, perpendiculars, etc.

(4) Systems, structure or components used as background, not ordered or modified by the drawing.

(5) Specialized information such as weight layers or piece numbers.

(6) Drawing features such as section or detail cut lines, break lines, and similar non-physical entities.

(7) Revision entities outside of the revision block such as revision triangles, hashing and revision clouds shall be on a separate layer for each revision. Note that this does not require that the drawing elements inserted at a revision be on a separate layer (though this is not prohibited either), only that the revision cloud and symbol be on a separate layer for each revision. Revision clouds and symbols shall not be erased, but the layer they are on shall be turned off following subsequent revisions.

c. Layer names shall contain at least one alphabetic character.

d. Leaders and text or notes inserted with the dimensioning command may be on either a text or dimension layer.

e. Layer names shall not be used solely to distinguish between line types or colors. Layer names used to distinguish line types or colors shall include elements that also identify the entities as to drawing function.

2. Layer "Defpoints" and "0-viewports" may be used for any information that should be visible on the drawing but not be plotted. This may include specialized plotting instructions, supplementary entities for dimensioning in paper space and similar entities. In general, layer "0-viewports" will be turned off, not frozen, during viewing or plotting drawings at all Coast Guard entities. Layers used within a standard Coast Guard drawing template shall not be changed.

F. Blocks And Shapes.

1. No blocks subject to copyright or other licensing restrictions may be used in any drawing.

F. 2. All shape files used, including those automatically produced by proprietary software, shall be provided to the Coast Guard with no license restrictions controlling use or distribution of the drawings containing these shapes. Proprietary software, which does not comply with this requirement, shall not be used for developing Coast Guard drawings.

3. Blocks including entities on layers other than layer zero may be inserted on any layer appropriate to their use, including layer "0".

4. Blocks intended to adopt the characteristics of the layer they are inserted on may be made on layer "0" but shall not be inserted on layer "0."

G. Drawing Zone Requirements.

1. All drawing sheets, except A and B size drawings, shall include zones for reference purposes. Zones are indicated by alphabetical (vertical) and numerical (horizontal) entries in format margins and by subdivisions or multiples thereof. Sizes A and B may also be zoned.

a. The alphabetical (vertical) lettering shall start at "A" on sheet one and each subsequent sheet (i.e. sheet one will start with "A", sheet two with "A", etc.).

b. The numerical (horizontal) entries shall start with "1" on the first sheet and continue with consecutive numbering throughout the drawing (i.e. on an H size 8 panel drawing, sheet one will start with 1 and go to 8, sheet two 9 to 16, sheet three 17 to 24, etc.).

2. If a sheet is inserted within an existing drawing (i.e. sheet two "A"), the insert sheet shall have alphabetic (horizontal) zone designators continuing the lettering schema of the sheet it is inserted after (i.e. if sheet three is zoned 17-A through 24-H, sheet three "A" shall be zoned 17-I through 24-P. See Figure 5-1.

H. External References.

1. External references (XREFs) links another drawing (file) to the current drawing. Unless the external referenced file is bound or inserted into the current drawing file, the information in the referenced file is overlaid onto the current drawing and remains a stand alone file not adding that drawing's data to the current drawing.

2. The current Coast Guard drawing management system does not allow for the tracking and control of external reference files (XREFs). Therefore, all XREFs shall be bound or inserted into the drawing file before delivery to ELC-02T.

I. Solid Models, 3D Models, Renderings/Shading.

1. Tessellation lines may appear on drawings if desired. (Note that the variable "DIPLSIH" controls the visibility of tessellation lines in solids but not from surfaces) Hidden line removal, if required, shall be set in each viewport using the "hideplot"

I. 1. setting under the "MVIEW" menu. Proper drawing plotting shall not require the user to set hide options prior to plotting.

2. Three dimensional models, either solids, wireframes or surfaces are acceptable. Note however, that 3D models, especially wireframe models, can be confusing or ambiguous and are not suitable for the production worker to fabricate and install systems. If 3D models are used, creators of drawings should ensure that the drawings they create are clear and understandable.

3. Note that drawings are generally accessed through the Naval Engineering – Technical Information Management System in ".dwf" format. Thus most users cannot shade, render drawing files or remove hidden lines. Shading or rendering shall not be required to view or plot a drawing, and drawings shall be clear and understandable without the use of shading or rendering.

J. Dimensions.

1. All dimensions shall be produced using named dimension styles, which include the "DIMLFAC" setting used. A separate named dimension style shall be produced and retained in the drawing file for each scale or style used. The dimension style name should include a component that indicates the model space to paper space scaling factor, e.g. "P48" would indicate a dimension style with a DIMLFAC setting of 48 (1/4" =1'-0").

2. Dimensions shall not be exploded. The dimension variable "DIMASO" shall be set to "on".

K. Text Styles. Text height shall not be set any smaller than 0.1-inches when the drawing is plotted at the correct scale for the border. Text not used for special purposes such as illustration of actual labels shall be "ROMANS". Width may be set as required for the text style.

L. Line Types. Only the line types supplied with AUTOCAD™ Release 14 shall be used. Wide polylines may be used as desired to improve drawing clarity. For example, the actual thickness of plating may be illustrated or pipe runs may be shown in actual width, or specific cables or other elements of a schematic may be highlighted with wide polylines.

M. Color Usage. The use of colors such as yellow should be avoided due to their poor visibility on plotted drawings.

N. Revision Symbol Block. A triangle style revision symbol block shall be used and inserted on a layer name based on the revision letter. The block is visibly attributed with the revision letter and the item number and is invisibly attributed with the item description, zone, revised by, date revised and applicability. A revision symbol block is provided with the standard USCG drawing templates. It may be replaced with another block as long as it complies with this instruction except it may contain additional attributes, or differently named attributes if required by a specific design development process. See Figure 6-15.

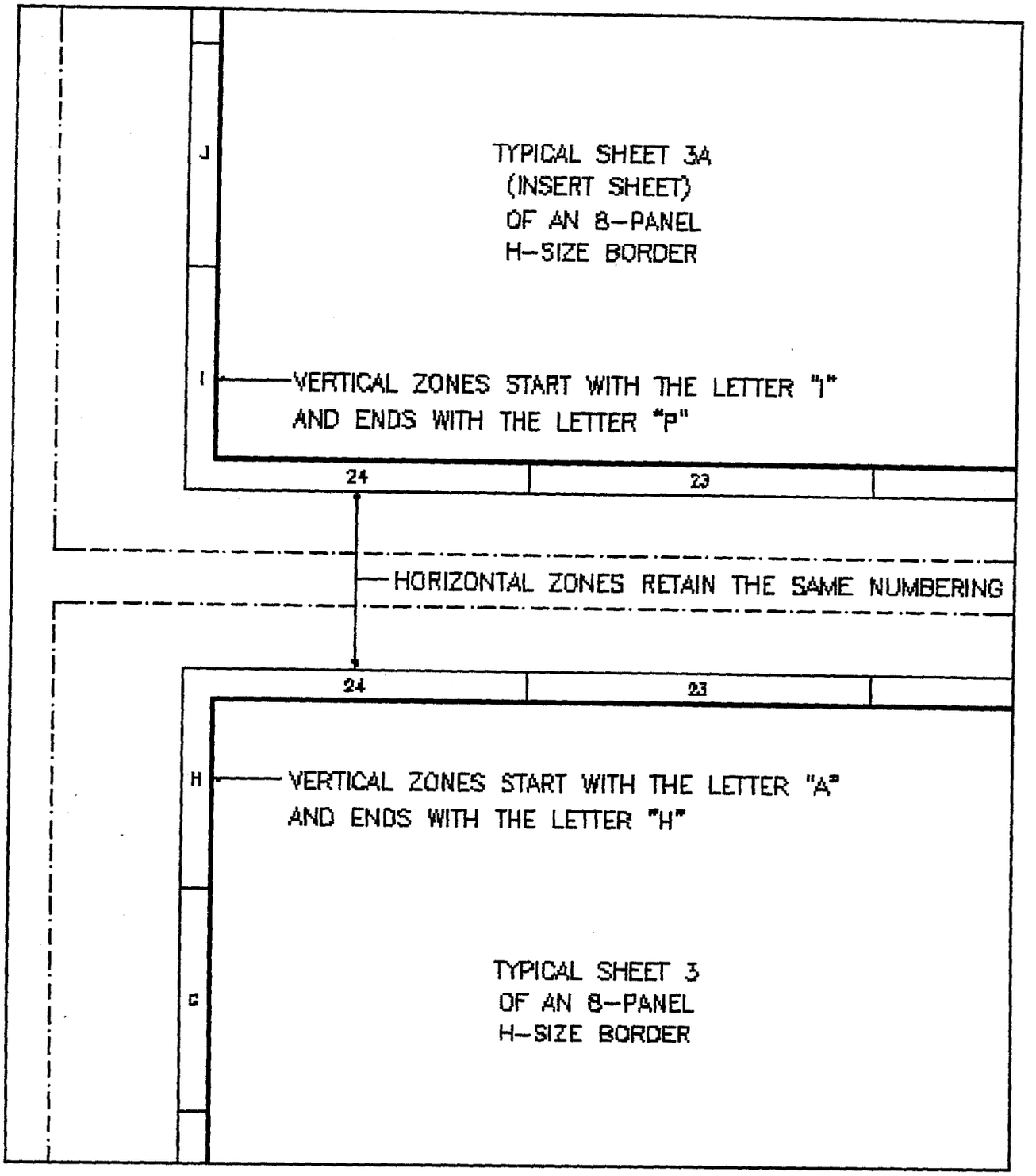



**FIGURE 5-1 DRAWING ZONES FOR INSERT SHEETS**

NOT TO SCALE – FOR ILLUSTRATION PURPOSES ONLY

## CHAPTER - 6 DRAWING SHEET, BORDER AND BLOCK FORMAT

A. Drawing Format And Sizes.

1. The format of all drawings shall be in accordance with instructions as specified herein.

2. Drawings shall be produced in one of the following sizes: A, B, C, D, and roll type H. "H" size drawings longer than 8 zones shall only be used when specifically authorized. Roll type H drawings of 132-inch length may be used for a limited number of drawings for specific purposes, which require continuous length (i.e. line drawings on approval by the signatory authority).

3. All sheets of a multiple sheet drawing shall be the same size.

B. Standardized Border Templates And Blocks.

1. Drawing border template files with all mandatory and conditional blocks have been developed in AutoCAD™ format and are available from ELC-02T. The files are intended to provide a consistent drawing format for information management. They can be downloaded from the ELC Internet site at http://www.uscg.mil/hq/elcbalt or Intranet site at http://cgweb.elcbalt.uscg.mil.

2. The following drawing template files shall be used. The attribute blocks shall be completed in accordance with Appendix A.

3. The files have been developed at a scale of 1-inch equals 1-inch and shall be used as prototype files. The files include all mandatory and conditional blocks.

**FIGURE 6-1 DRAWING BORDER TEMPLATE FILES WITH BLOCKS**

| TEMPLATE FILE NAME | SHEET DESG. | SHEET SIZE | SHEET NBR | COMMENT |
|---|---|---|---|---|
| SHTA-H1 | A | 8.0"x10.5" | 1 | Portrait |
| SHTA-H2 | A | 8.0"x10.5" | 2 | Portrait |
| SHTA-V1 | A | 10.5"x8.0" | 1 | Landscape |
| SHTA-V2 | A | 10.5"x8.0" | 2 | Landscape |
| SHTB-1 | B | 10.5"x16.5" | 1 | |
| SHTB-2 | B | 10.5"x16.5" | 2 | |

| | | | | |
|---|---|---|---|---|
| SHTC-1 | C | 16.5"x21.5" | 1 | |
| SHTC-2 | C | 16.5"x21.5" | 2 | |
| SHTD-1 | D | 21"x33" | 1 | |
| SHTD-2 | D | 21"x33" | 2 | |
| SHTH-8-1 | H - 8 panel | 28"x44" | 1 | |
| SHTH-8-2 | H - 8 panel | 28"x44" | 2 | |
| SHTH-12-1 | H-12 panel | 28"x66 | 1 | |
| SHTH-12-2 | H-12 panel | 28"x66 | 2 | |
| SHTH-16-1 | H-16 panel | 28"x88" | 1 | |
| SHTH-16-1 | H-16 panel | 28"x88" | 2 | |
| SHTH-24-1 | H-24 panel | 28"x132" | 1 | |
| SHTH-24-2 | H-24 panel | 28"x132" | 2 | |

Note 1: The actual border sizes of drawings sizes A, B, C & D have been reduced to allow printing with a standard laser printer. The zone sizes have been adjusted to compensate for this reduction.

Note 2: Sheet size does not include protective margins.

C. Mandatory And Conditional Drawing Blocks.

1. Sheet One - Mandatory Blocks.

   a. Sheet one of all drawings shall have a Coast Guard Title with USCG Approval Block, Command or Contractor Block, Supplementary Drawing Number Blocks (except A and B sizes), Revision History Block, Applicability Block, Sheet Revision Status Block, Special Notations Block and Reference Plan Block.

   b. The format of mandatory blocks shall not be modified except for the Command or Contractor Block. The information contained therein shall be changed to reflect the required information.

2. Sheet One – Conditional Blocks. Under certain conditions, sheet one of all drawings may require the use of a Linear Reduction Scale Block, Weight Control Block, Plan Distribution Block, General Notes Block, Revision Triangle Block, Material List

C. 2. Block and a Special Plotting Instruction Block. Paragraph D below identifies when the use of conditional blocks is mandatory.

Note 1: On "H' size drawings, when insufficient room exists to place the required blocks on sheet one, the Materials List Block, Weight Control Block and General Notes Block may be placed on sheet two and subsequent sheets as needed for space provided the information is retained on the first series of sheets in the drawing.

Note 2: In addition to the blocks identified in Note 1, for drawing sizes A, B, C & D, the Revision History Block, Sheet Revision Status Block, Plan Distribution Block, Applicability Block, Special Plotting Instruction Block, Reference Plans Block and Special Notations Block (size A & B only) may be placed on sheet two and subsequent sheets as needed for space provided the information is retained on the first series of drawing sheets.

3. Continuation Sheet - Mandatory Blocks. All continuation sheets shall have a Coast Guard Title Block (minus USCG Approval) and the Supplementary Drawing Number Blocks (except A and B sizes).

4. Continuation Sheet - Conditional Blocks. Under certain conditions, continuation sheets may require the use of the Linear Reduction Scale Blocks, Revision Triangle Blocks and Special Plotting Instruction Blocks. Paragraph D below identifies when the use of conditional blocks is mandatory.

D. Block Descriptions.

1. Coast Guard Title With USCG Approval Block – Mandatory.

Sheet one and all continuation sheets shall contain a Coast Guard Title Block. Sheet one will include an area for USCG Approval. See Figures 6-2 & 6-3.

Block File Name: CGTBWSBLK (sheet one) (attribute block)

Block File Name: CGTBLK (continuation sheets) (attribute block)

2. Command or Contractor Block – Mandatory.

Sheet one of all drawings shall contain a Command or Contractor Block. The name, address, contract number of the designing activity and internal routing/approval information shall be entered in this block. See Figure 6-4.

Block File Name: CCBLK (attribute block)

D. 3. Supplementary Drawing Number Blocks - Mandatory.

Sheet one and all continuation sheets on drawing border sizes "C" and larger shall contain Supplementary Drawing Number Blocks. The number of required blocks will be determined by drawing size. See Figure 6-5.

Block File Name: SUPDWGBLK (attribute block)

4. Reference Plan Block - Mandatory.

Sheet one of all drawings shall contain a Reference Plan Block. The block shall contain a list of all related drawings. See Figure 6-6.

Block File Name: REFPLBLK

5. General Notes Block- Conditional.

A General Notes Block shall be inserted as necessary on sheet one of the drawing. The block shall be used to enter general notations pertaining to the drawing. See Figure 6-7.

Block File Name: GNOTBLK

6. Materials List Block - Conditional.

A Materials List Block shall be inserted as necessary on sheet one of the drawing. The block shall be used to enter material, parts, etc. information. The block may be modified as necessary to accommodate the type of information to be displayed. See Figure 6-8.

Block File Name: MATBLK

7. Linear Reduction Scale Block – Conditional.

A Linear Reduction Scale Block shall be included on all drawing sheets when features depict physical or actual sizes. See Figure 6-9.

Block File Name: LRSBLK

8. Weight Control Block – Conditional.

When appropriate or required, a Weight Control Block shall be included on sheet one of the drawing listing the total weight of the components manufactured or installed under control of the drawing. Weight need not be included for drawings depicting components prior to final finish, such as casting drawings or drawings depicting tooling or other components not part of the lightship weight. The block may be modified as necessary to accommodate the type of information to be displayed. See Figure 6-10.

Block File Name: WGTBLK

D. 9. Revision History Block – Mandatory.

Sheet one of all drawings shall have a Revision History Block. The block shall contain the information outlined in Chapter 8. See Figure 6-11.

Block File Name: REVHISBLK

10. Sheet Revision Status Block – Mandatory.

Sheet one of all drawings shall have a Sheet Revision Status Block except for single sheet drawings. See Figure 6-12.

Block File Name: SREVBLK

11. Applicability Block – Mandatory.

Sheet one of all drawings shall have a hull and alternate plan-set hull Applicability Block. See Figure 6-13.

Block File Name: APPBLK

12. Special Plotting Instructions Block – Conditional.

Sheet one and all continuation sheets shall have a Special Plotting Instructions Block. This block contains plotting instructions in accordance with Chapter 7. The block shall be inserted on the "DEFPOINTS" layer. See Figure 6-14.

Block File Name: PLTBLK

13. Special Notations Block – Mandatory.

Sheet one of all drawings shall have a Special Notation Block. The block shall contain any special notations relating to the drawing (i.e. Drawing cancelled – Date, Drawing supercedes drawing XXX-XXX-X, Drawing superceded by drawing XXX-XXX-X, etc.). See Figure 6-15.

Block File Name: SNOTESBLK

14. Revision Triangle Block – Conditional.

When a drawing is revised, a Revision Triangle Block and cloud shall be included at the point on the drawing depicting the revision. See Figure 6-16.

Block File Name: REVTRIBLK (attribute block)

15. Plan Distribution Box - Conditional.

When appropriate or required, a Plan Distribution Box shall be included on sheet one of the drawing. The block shall be located outside the drawing border. Figure 6-17.

Block File Name: PDISBLK

E. Block Locations.

1. The following blocks must be retained in the location identified on the drawing border template files.

   a. Coast Guard Title With USCG Approval Block (Sheet 1).

   b. Coast Guard Title Block (Sheet 2).

   c. Command or Contractor Block.

   d. Supplementary Drawing Number Blocks.

   e. Reference Plan Block.

   f. Revision History Block.

   g. Sheet Revision Status Block.

   h. Applicability Block.

   i. Special Plotting Instructions Block.

   j. Special Notations Block.

   k. Plan Distribution Block

2. The following blocks can be re-located (on the appropriate sheet) to maximize available drawing space.

   a. General Notes Block.

   b. Material List Block.

   c. Linear Reduction Scale Block.

   d. Weight Control Block.

   e. Revision Triangle Block (included at the point on the drawing depicting the revision).

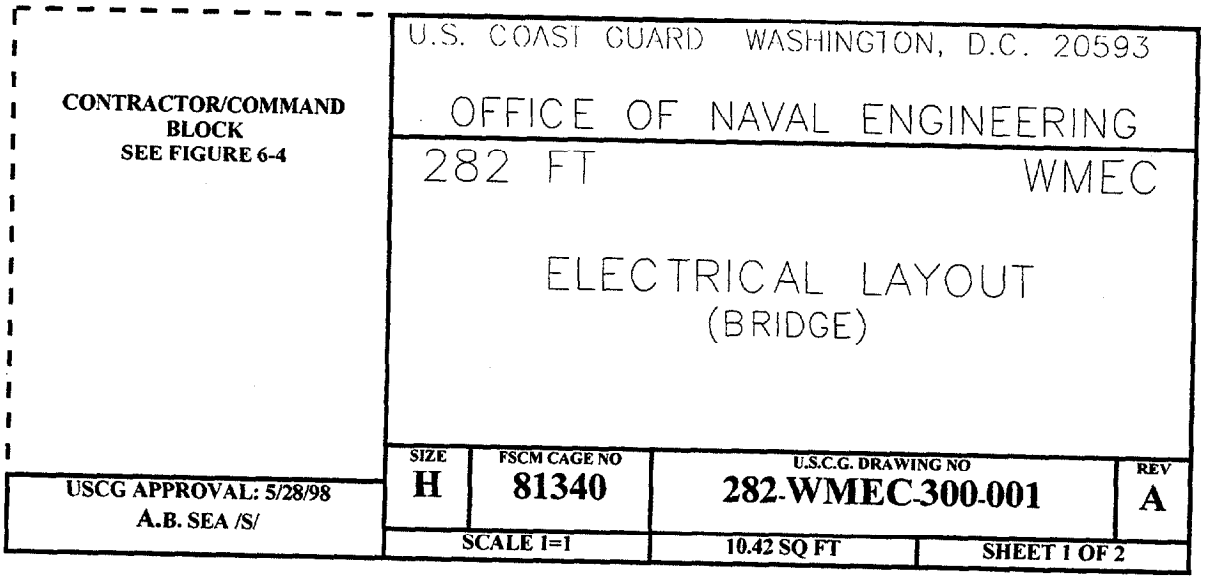



**FIGURE 6-2 COAST GUARD TITLE WITH USCG APPROVAL BLOCK (SHEET ONE)**

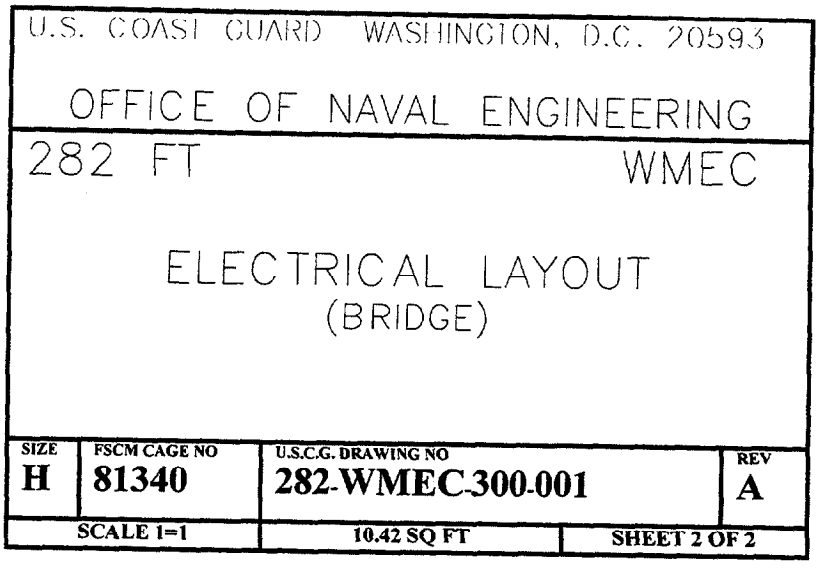



**FIGURE 6-3 COAST GUARD TITLE BLOCK (SHEET TWO)**

NOT TO SCALE – FOR ILLUSTRATION PURPOSES ONLY

| (CONTRACTOR/COMMAND) |
|---|
| **XYZ SHIPYARD INC.**<br>**3425 BALLARD RD**<br>**ENG DEPT, MAIL STOP 25**<br>**GRAND FORK, MD 23333**<br><br>**PHONE: (555)555-5555**<br><br>**CONTRACT/PO NO.**<br>**DTCG-23-222-2222** |
| DESIGN: A.SEA/S/ 5/26/98 |
| CHK: I.M. ABLE/S/ 5/28/98 |
| APP: C.G. GAR /S/ 5/29/98 |
| APP: D.D. DAY /S/ 5/30/98 |

**FIGURE 6-4 COMMAND OR CONTRACTOR BLOCK**

| DWG NO | SHEET | REV |
|---|---|---|
| 282-WMEC-300-001 | 1 | A |

**FIGURE 6-5 SUPPLEMENTARY DRAWING NUMBER BLOCKS**

| NO | TITLE | DRAWING NO |
|---|---|---|
| 3 | ELECTRICAL WIRING DIAGRAM - 21 MC | 282-WMEC-300-10 |
| 2 | ELECTRICAL WIRING DIAGRAM - RADIO ROOM | 282-WMEC-300-8 |
| 1 | ELECTRICAL WIRING DIAGRAM - BRIDGE | 282-WMEC-300-2 |
| REFERENCE PLANS | | |

**FIGURE 6-6 REFERENCE PLAN BLOCK**

NOT TO SCALE – FOR ILLUSTRATION PURPOSES ONLY

GENERAL NOTES

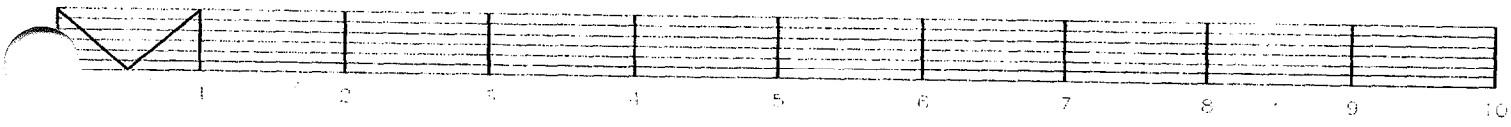
1. ENTER ANY GENERAL NOTES PERTAINING TO THE DRAWING IN THIS AREA.

**FIGURE 6-7 GENERAL NOTES BLOCK**

| MATERIALS LIST | | | | | | |
|---|---|---|---|---|---|---|
| REV | PIECE NO | QTY | UNIT | MFR # / NSN | DESCRIPTION | MATERIAL |
| - | 1 | 1 | EA | 7610-00-843-2388 | IMPELLOR | BRONZE |
| A | 2 | 2 | EA | 899736 | WEAR RING | BRONZE |
| | | | | | | |

**FIGURE 6-8 MATERIALS LIST BLOCK**

**FIGURE 6-9 LINEAR REDUCTION SCALE BLOCK**




**1" = 1'**

| WEIGHT CONTROL | | | | | | | |
|---|---|---|---|---|---|---|---|
| WEIGHT GROUP | DESCRIPTION | WT (LBS) | VCG REF BL | LCG (see note) | F/A | TCG REF CL | P/S |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

NOTE: Longitudinal Center of Gravity (LCG) - The reference point is the forward perpendicular for vessels 120'and greater in length. For vessels and standard boats less than 120', identify the reference point used.

**FIGURE 6-10 WEIGHT CONTROL BLOCK**

NOT TO SCALE – FOR ILLUSTRATION PURPOSES ONLY

| REVISIONS | | | | | | |
|---|---|---|---|---|---|---|
| REV | SHT | ZONE | ITEM | DESCRIPTION | DATE | INITIALS & ORG |
| A | 2 | 10-D | 1 | REVISION MADE TO IMPLEMENT SHIPALT 110A-B-010. ADDED DETAIL 9-F | 5/22/97 | HST/s/ ELC-019 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

**FIGURE 6-11 REVISION HISTORY BLOCK**

| | |
|---|---|
| 5 | C |
| 4A | B |
| 4 | A |
| 3 | - |
| 2 | B |
| 1 | C |
| SHT | REV |
| SHT. REV. STATUS | |

**FIGURE 6-12 SHEET REVISION STATUS BLOCK**

| | |
|---|---|
| 100-TE | 322, 327 |
| 378-FRAM-W | ALL HULLS |
| 378-FRAM-E | ALL HULLS |
| PLAN-SET | HULLS |
| APPLICABILITY | |

**FIGURE 6-13 APPLICABILITY BLOCK**

NOT TO SCALE – FOR ILLUSTRATION PURPOSES ONLY

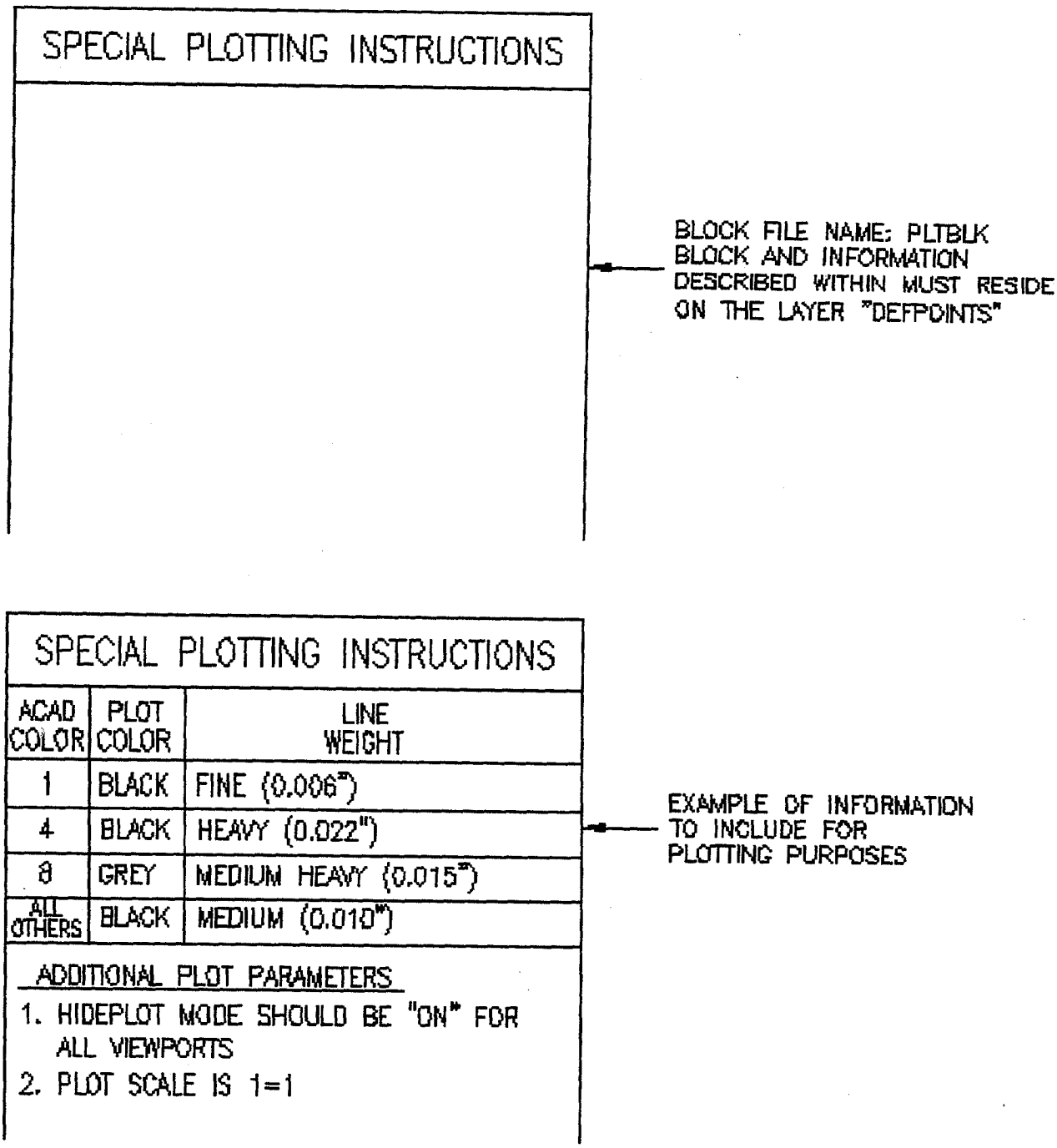
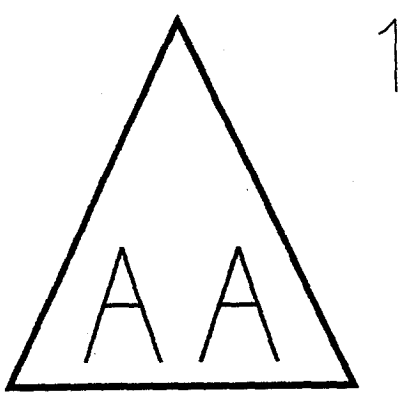



**FIGURE 6-14 SPECIAL PLOTTING INSTRUCTIONS BLOCK**

NOT TO SCALE – FOR ILLUSTRATION PURPOSES ONLY

| SPECIAL NOTATIONS |
| --- |
| THIS DRAWING SUPERCEDES DRAWING NO. 282-WMEC-643-001. |

**FIGURE 6-15 SPECIAL NOTATIONS BLOCK**




NOTE: Revision triangle used to show where revisions where made.

**FIGURE 6-16 REVISION TRIANGLE BLOCK**

NOT TO SCALE – FOR ILLUSTRATION PURPOSES ONLY

| PLAN DISTRIBUTION | DATE ISSUED | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| * = SEPIA<br>O=ORIGINAL | | | | | | | | | | |
| INDUSTRIAL DEPT | | | | | | | | | | |
| STRUCTURAL GROUP | | | | | | | | | | |
| SHOPS X11 SHIPFITTER SECT. | | | | | | | | | | |
| X12 SHEETMETAL SECT. | | | | | | | | | | |
| X13 WELDING SECT. | | | | | | | | | | |
| MECHNICAL GROUP | | | | | | | | | | |
| SHOPS X21 PIPEFITTER SECT. | | | | | | | | | | |
| X22 MACHINE SECT. | | | | | | | | | | |
| X23 MARINE MACHINE SECT. | | | | | | | | | | |
| ELECTRICAL GROUP | | | | | | | | | | |
| SHOPS X31 ELECTRICAL SECT. | | | | | | | | | | |
| X32 ELECTRONIC SECT. | | | | | | | | | | |
| X33 ORDNANCE SECT. | | | | | | | | | | |
| SERVICES GROUP | | | | | | | | | | |
| SHOPS X41 WOODWORKING SECT. | | | | | | | | | | |
| SHOPS X42 PAINT SECT. | | | | | | | | | | |
| SHOPS X43 MATERIAL HNDLG SECT. | | | | | | | | | | |
| SHOPS X44 RAILWAY/DRYDKG SECT. | | | | | | | | | | |
| SHOPS X45 BOAT BLDG. SECT. | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| ENGINEERING DIVISION | | | | | | | | | | |
| EOMB | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| CG DISTRIBUTION | | | | | | | | | | |
| COMDT G-AWP | | | | | | | | | | |
| COMDT G-SEN | | | | | | | | | | |
| ELC-023 | | | | | | | | | | |
| ELC-02T | | | | | | | | | | |
| ELC-014 | | | | | | | | | | |
| TISCOM | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| OTHER DISTRIBUTION | | | | | | | | | | |
| Q&A STAFF | | | | | | | | | | |
| MLCLANT (VR) | | | | | | | | | | |
| MLCPAC (VR) | | | | | | | | | | |
| | | | | | | | | | | |
| ENGINEERING DIVISION FILES | | | | | | | | | | |
| ALTERATION | | | | | | | | | | |
| | | | | | | | | | | |
| TOTAL | | | | | | | | | | |

**FIGURE 6-17 PLAN DISTRIBUTION BOX – CONDITIONAL**

NOT TO SCALE – FOR ILLUSTRATION PURPOSES ONLY

## CHAPTER - 7 PLOTTING INSTRUCTIONS

A. Normal Layer Line Width And Visibility.

1. All colors except cyan and blue will normally be printed in a nominal line width of 0.010 inches. Cyan will normally be printed with a line width of 0.015 inches and blue will normally be printed with a line width of 0.022 inches.

2. All layers except "0-viewports" and all layers beginning with the phrase "bogus" or "junk" will normally be on and globally thawed. Layer "0-viewports" will normally be off, not frozen. Layers beginning with the phrase "bogus" or "junk" will normally be either globally frozen or off, and the person creating the drawing must ensure that the drawing will plot correctly in either case. (Note that the visibility of blocks inserted on frozen layers is different than that of blocks inserted on turned off layers.) If other layers are not normally intended to be visible or plotted, they should be frozen with the "vplayer" command or its equivalent dialog boxes.

3. Drawings requiring other plotting instructions must have the special plotting instructions prominently visible on layer "Defpoints".

B. Special Plotting Instructions. All special plotting instructions will be included in the special plotting instruction block. See Chapter 6, paragraph D.12.

## CHAPTER - 8 GENERAL DRAWING PRACTICES

A. When To Create A New Drawing. New drawings should be created (with a new drawing number) when the data to be presented involves an entirely new system, equipment or cannot otherwise be appropriately integrated (by revision) into the existing drawing.

B. Drawing Revisions.

1. Standard Revision Practices - The following standard drawing revision practices shall be observed. These practices are generally in accordance with MIL-T-31000 Technical Data Packages, General Specifications and DOD-STD-100. Additional information may be found in those documents or commercially prepared compilations of those documents for industry use. For specific questions and assistance, contact ELC (02T).

   a. Drawings should be revised if the extent of drawing changes are minor and the old data can be easily retained as explained in paragraph B.1.c. below. Adding additional sheets to a drawing (see paragraph B.1.e. below) applies here.

   b. Revise Original Master Engineering Drawings Only. Only original master engineering drawings shall be revised. Revising a re-producible copy results in the generation of a duplicate drawing and leads to endless confusion. If it becomes necessary to prepare a draft revision on a duplicate drawing, the drawings shall be clearly marked in large letters "UNOFFICIAL DRAWING: FOR DRAFT REVISION PURPOSES ONLY" immediately adjacent to the title block.

   c. Retaining Historical Data. Revisions shall be prepared retaining as much of the previously shown data as possible. Ideally, it should be possible to reconstruct the previous version of the drawing simply by undoing the changes described in the revision column. Thus the revision column itself should detail every change made, using wording that describes the change as accurately as possible, such as "ADDED DETAIL 9-F", "DELETED REF 16", or "RV-7 SET PRESS WAS 60 PSI". Note in the last case that it would be redundant to say "CHANGED RV-7 SET PRESS FROM 60 TO 75 PSI", because the body of the drawing already shows the set pressure as 75 PSI. Data should be hashed-out (not erased, unless the revision column will document the previous data) and redrawn in another place. It is important to retain the previously shown data because it may be years before an alteration is actually accomplished aboard a platform, and the operational and maintenance commands must have information that depicts their actual platform configuration in the meantime.

   d. Give Reason for Revision. The revision column should begin by documenting the reason for the revision, such as "TO SUIT SHIPALT (number if known) TO REPLACE BEARING MATERIAL XXX".

B. 1. e. Add Additional Sheets. An effective way to revise a drawing is to add new sheet(s). This approach is especially effective when large portions of a drawing must be re-drawn. The old portions are simply hashed out, and the new sheet(s) can then be drawn in AutoCAD™. This approach also retains the old data for historical purposes.

f. Show Revision Status.

(1) On drawings that consist of more than one sheet, it is common practice for each sheet to carry its own revision designator (i.e. all sheets of the drawing do not necessarily carry the same revision), so that only the affected sheets need to be issued when revised, not all the sheets. Sheet one of all drawings will always contain the highest revision character of the drawing as well as any subsequent sheets that contain a revision block, while each remaining sheets carry the revision character associated with the last revision that happened to affect that particular sheet. The revision character on any sheet (except sheet one and subsequent sheets containing revision blocks) can therefore skip letters, such as from D to G.

(2) Accordingly, the first sheet of a multi-sheet drawing shall have a revision status table, which shall indicate the revision character of each sheet of the drawing. A revision status table shall be added if needed to all multi-sheet drawings whenever the drawing is revised for other reasons. With each revision to any part of the drawing, the revision status of sheet 1 and any subsequent sheets that contain a revision block shall be updated to the next sequential letter. Likewise, the revision character of each affected sheet shall be updated to the same character as sheet one, and finally the revision status table shall be updated. The revision character of unaffected sheets shall not be changed.

(3) The revision designator for a drawing shall be identified by an upper case letter or letters. The first revision shall be identified by "A", the second revision by "B", and so forth. Successive changes shall use the next sequential letter, except that the letters "I", "0", "Q", "S", "X", and "Z" shall not be used. Upon exhaustion of the alphabet, the next sequential revisions shall be "AA", "AB", etc., and then "BA", "BB", etc.

(4) Where numbers have been used instead of letters for revision designators, the use of numbers shall be continued.

g. Multi-Cutter Drawing Applicability. Drawings applicable to more than a single platform may be revised only if changes made do not result in the loss of information describing other platforms. Drawings may include alternative details applicable to different platforms if the applicability is clearly indicated and no alternative detail applicable to any other platform is erased or crossed out.

B. 1. h. Revision Block.

(1) All revision notes for a multi-sheet drawing shall be placed in one revision block or column, beginning on sheet one and continuing to other sheet(s) as needed for space. In addition to revision details, the revision note shall identify the sheet number and applicable panel. However, if existing revisions to a drawing have been noted on the individual sheets, that practice may continue as long as a bold print note on sheet one identifies that "REVISION NOTES ARE DETAILED ON INDIVIDUAL SHEETS". This latter practice shall not be used for revisions to new or previously un-revised drawings.

(2) A triangular revision symbol or identifier shall be placed adjacent to all revised areas, except where the entire sheet has been added by revision. The triangular symbol shall contain the appropriate revision character. Where multiple items are being revised under the same revision, each item or group of items shall be identified with a superscript number outside the revision symbol that relates to the revision notes in the revision block. Note that the revision symbol has a mandatory format, layer and attributes.

C. Revision Procedures For Special Situations.

1. Revision Of Drawings Associated With Engineering Changes (EC).

a. The question of when to revise a master engineering drawing frequently arises during the course of platform alteration development. ECs are occasionally not approved as originally conceived. Thus, if the master drawing has been extensively revised before the change is disapproved or redirected, "un-revising" the master drawing to its original form is extremely difficult. For this reason, master drawings shall not be revised for prototyping purposes.

b. Accordingly, a master engineering drawing shall not be revised until a Configuration Control Board (CCB) has reviewed and approved the EC. If a CCB has not been held, or is not planned to be held, ELC (02T), in concert with Commandant (G-SEN) as appropriate, must give approval before starting to revise a master engineering drawing.

(1) Drawings issued with or referenced by ECs will be the minimum necessary to effect the modifications. In some cases, a sketch included in the change package may be all that is required. If selected record drawings (See the Naval Engineering Manual, COMDTINST M9000.6, Chapter 085) are affected by the EC, then the drawings shall normally be revised to suit by the time the EC is issued. If a drawing showing details of the modification is needed for proper alteration execution, then revision of the applicable detailed drawing will be accomplished by the time the EC is issued. Unless specifically called for in the alteration, no additional drawing revisions shall be made at the time of EC accomplishment.

C. 1. b. (2) Engineering Changes for standard boats. Because it is intended that all standard boat drawings be kept up-to-date, all drawings affected by an alteration will be revised before the EC is issued.

c. In most cases, a diagrammatic drawing or sketch should be made with red pencil on a print for checking purposes before proceeding with the revision to the master tracing. Using AutoCAD™ for DRAFT prototype design purposes shall be considered. Any DRAFT revision drawing should have a suitable note added, as described in paragraph B.1.b.

2. Master Drawing Not Available - This situation arises for example when master engineering drawings have not yet been received from the shipbuilder, and changes need to be made to certain systems.

a. A single, new master engineering drawing for each appropriate set of drawings shall be created for the purpose of documenting needed changes. This new master engineering drawing will be retained by ELC-02T and will be available for depicting various needed changes until the complete master engineering drawings are received from the shipyard.

b. The title of this new master engineering drawing shall be "CHANGES TO VARIOUS DRAWINGS". The following note shall be displayed prominently on it's face: "THIS DRAWING WAS CREATED FOR THE PURPOSE OF DOCUMENTING CHANGES TO VARIOUS SYSTEMS AND EQUIPMENT WHICH WERE DETERMINED TO BE NECESSARY WHEN THE ORIGINAL MASTER DRAWINGS WERE NOT AVAILABLE FOR REVISION." The USCG drawing number for this new master engineering drawing shall be (Cutter Class Number) WXXX 085-100.

c. This new master engineering drawing (which may grow to many sheets) shall be used to depict changes to any and all systems and equipment regardless of the SWBS grouping of the system or equipment being changed. The drawing will serve as a single "place" where all such needed changes can be documented.

d. This master engineering drawing shall be used to depict the needed changes in the most practical manner, by recreating only as much of the (absent) system drawing as necessary to understand the modification(s) that is to be made.

e. It is mandatory that this new master engineering drawing make reference (by drawing number in a list of references on sheet one to the (absent) system drawing. The list of references will be used as a "tickler" to update the absent master engineering drawings when received. In addition, a note shall state: " This change was developed based on information shown at Revision "X" of reference (drawing number)."

C. 2. f. When the (previously absent) master engineering drawings become available, it will only be necessary to pull the affected drawings and revise them as follows: Place the following note immediately adjacent to the title block: "FOR CERTAIN REVISIONS TO THIS DRAWING, SEE USCG DWG WXXX 085-100."

g. If time permits and it is feasible, the changes can actually be incorporated by revision, in which case the related portions of WXXX 085-100 should be hashed out to minimize confusion.

D. Superceding A Drawing.

1. Drawings should be superseded if extensive revisions are required or if the quality of the existing master engineering drawing is poor (torn, faded, smeared, etc.). If a drawing is superseded, the following steps shall be followed:

a. The title block of the superseded (old) master engineering drawing shall be hashed out and the following statement entered in bold characters near the drawings title block: "THIS DRAWING IS SUPERSEDED BY USCG DWG (S) YYY."

b. The new (superseding) master engineering drawing shall carry a new USCG drawing number as assigned by ELC-02T. The superseded drawing title, approval names (text format) and approval dates shall be carried over to the new drawing. The new drawing shall be a "clean" drawing; i.e. revision symbols, cross-outs, and the revision block from the old superseded drawing shall not be reconstructed on the new drawing. The following statement entered in bold characters shall be placed immediately adjacent to the title block "THIS DRAWING SUPERSEDES USCG DWG XXX." The original issue of this drawing shall be REV "A", and the revision column shall be annotated as follows "THIS DRAWING WAS CREATED BECAUSE (give reason)." If redrawn with substantive change from what was shown on the superseded drawing, describe the changes and the reason for the changes in the revision column as per normal revision practices.

c. The superseded drawing, with the title block hashed out and superseded statement entered next to the title block, shall be returned to ELC-02T and retained in the active file and in the drawing index for the affected platform(s) for historical information purposes.

E. Canceling A Drawing.

1. If a drawing no longer contains useful or applicable information, such as an entire system being removed from a platform, the drawing shall be cancelled. Hash mark out the title block and place the following bold face note immediately adjacent to the title block "THIS DRAWING HAS BEEN CANCELLED." Give the reason for the drawing cancellation in the revision column. The cancelled drawing, with the title

E. 1. block hashed out and cancellation statement entered next to the title block, shall be returned to ELC-02T and retained in the active file and in the drawing index for the affected platform(s) for historical information purposes.

F. Technical Publication Drawings.

1. Drawings in technical publications may require revision after accomplishment of alterations to reflect the updated system configuration. Drawings are revised and new prints issued to technical publication holders by technical publication amendments.

2. Revisions to technical publication drawings that have an assigned Coast Guard drawing number are accomplished by revising the master engineering drawing held by ELC-02T and republishing the revised drawing(s) as an amendment to the technical publication.

3. Revisions to technical publication drawings that do not have an assigned Coast Guard drawing number shall be accomplished as follows:

   a. Changes that are "moderate to major" in nature require that a master engineering drawing be created. This drawing can be prepared by: 1) photographic production of a mylar or a suitable print or, 2) production of an electronic copy of the drawing by digital scanning or digitizing to AutoCAD™, revising as required, and plotting the new master engineering drawing. The new drawing shall contain the original manufacturer's title block, revision block, notes and list of references. The new master engineering drawing shall also be given a standard Coast Guard title block and a new revision block for documentation of Coast Guard revisions. These drawings shall be assigned a Coast Guard drawing number and become a part of the master engineering drawing file.

   b. Changes that are "minor" in nature can normally be accomplished without creating a new master engineering drawing. In such cases, make pen-and-ink changes to the drawing contained in the master technical publication and document these changes in the revision block.

## APPENDIX - A INSTRUCTIONS FOR COMPLETEING ATTRIBUTE BLOCKS

A. Coast Guard Title With USCG Approval Block (Sheet 1).

1. DRAWING NO: Enter the Coast Guard assigned drawing number. See Chapter 3, paragraph 3. A.

2. REVISION: Enter the drawing revision character. Note that the first sheet of a drawing must contain the highest revision character of the drawing. See Chapter 8, paragraph 8. B. f.

3. SHEET NO: Enter the sheet number of the drawing.

4. TOTAL NO. OF SHEETS: Enter the total number of sheets in the drawing set. If the drawing includes insert sheets (i.e. sheet 5A), include this in the total number of sheets (i.e. if a drawing consists of sheets 1, 2, 2A & 3, the total number of sheets would be 4).

5. LENGTH: Enter the length of the vessel or standard boat in feet.

6. CLASS: Enter the class designator of the vessel or standard boat.

7. TOP DWG TITLE: Enter line one of the drawing title. See Chapter 5, paragraph 5. C.

8. CENTER DWG TITLE: Enter line two of the drawing title. See Chapter 5, paragraph 5. C.

9. SUB-TITLE_LINE-3: If sub-titles are used, enter line two of the drawing sub-title. See Chapter 5, paragraph 5. C.

10. SUB-TITLE_LINE-4: If sub-titles are used, enter line two of the drawing sub-title. See Chapter 5, paragraph 5. C.

11. DRAWING SCALE: Enter the drawing scale factor.

12. APPROVAL DATE: Enter the date the drawing was approved by the Coast Guard.

13. APPROVAL AUTHORITY: Enter the name of the USCG approving official. See Chapter 2, paragraph 2. A.

14. APPROVAL SIGNATURE: Enter "/s/" to indicate electronic signature. See Chapter 2, paragraph 2. A.

B. Coast Guard Title Block (Sheet 2).

1. DRAWING NO: Enter the Coast Guard assigned drawing number. See Chapter 3, paragraph 3. A.

2. REVISION: Enter the drawing revision character. Note that the first sheet of a drawing must contain the highest revision character of the drawing. See Chapter 8, paragraph 8. B. f.

3. SHEET NO: Enter the sheet number of the drawing.

4. TOTAL NO. OF SHEETS: Enter the total number of sheets in the drawing set. If the drawing includes insert sheets (i.e. sheet 5A), include this in the total number of sheets (i.e. if a drawing consists of sheets 1, 2, 2A & 3, the total number of sheets would be 4).

5. LENGTH: Enter the length of the vessel or standard boat in feet.

6. CLASS: Enter the class designator of the vessel or standard boat.

7. TOP DWG TITLE: Enter line one of the drawing title. See Chapter 5, paragraph 5. C.

8. CENTER DWG TITLE: Enter line two of the drawing title. See Chapter 5, paragraph 5. C.

9. SUB-TITLE_LINE-3: If sub-titles are used, enter line two of the drawing sub-title. See Chapter 5, paragraph 5. C.

10. SUB-TITLE_LINE-4: If sub-titles are used, enter line two of the drawing sub-title. See Chapter 5, paragraph 5. C.

11. DRAWING SCALE: Enter the drawing scale factor.

C. Command Or Contractor Block.

1. CONTRACTOR/COMMAND NAME: Enter contractor or command name.

2. ADDRESS LINE-1: Enter line one of the contractor or command address.

3. ADDRESS LINE-2: Enter line two of the contractor or command address.

4. ADDRESS LINE-3: Enter line three of the contractor or command address.

5. ADDRESS LINE-4: Enter line four of the contractor or command address.

C. 6. PHONE NO: Enter the contractor or command phone number. Include the area code in parentheses.

7. CONTRACT/PO NO: Enter the contract, purchase, project or job order number.

8. SIGNATURE: Enter the name of the designing individual. Include "/s/" to indicate electronic signature.

9. DATE: Enter the design date

10. SIGNATURE: Enter the name of the individual who checked the drawing. Include "/s/" to indicate electronic signature.

11. DATE: Enter the date the drawing was checked.

12. SIGNATURE: Enter the name of the individual with contractor or command approval authority. Include "/s/" to indicate electronic signature.

13. DATE: Enter the date of approval.

14. SIGNATURE: Enter the name of the individual with contractor or command final approval authority. Include "/s/" to indicate electronic signature.

15. DATE: Enter the date of final approval.

D. Supplementary Drawing Number Block.

1. DRAWING NO: Enter the Coast Guard assigned drawing number. See Chapter 3, paragraph 3. A.

2. SHT NO: Enter the sheet number of the drawing.

3. REVISION LETTER: Enter the sheet revision character. Note that the first sheet of a drawing must contain the highest revision character of the drawing. See Chapter 8, paragraph 8. B. f.

E. Revision Triangle Block.

1. REVISION LETTER: Enter the appropriate revision character.

2. REVISION ITEM #: Enter the item number from the revision block.

3. ZONE: Enter the zone designator the item is located in.

4. ITEM DESCRIPTION: Enter a brief description of the item.

E. 5. DATE OF REVISION: Enter the date of the appropriate revision from the revision block.

6. REVISED BY: Enter the initials of the person making the revision.

7. APPLICABILITY: Enter the hull numbers of the vessels the revision applies to. Use "ALL" if the revision applies to the same vessels as the drawing.